

ABSTRACT

This disclosure provides a method and apparatus for processing descriptive statements. More particularly, this disclosure provides a way of quickly and reliably signing and authenticating RDF statements without requiring a data sort. By using a commutative hashing function that combines multiple independent hashes, ideally one per serialized statement, signing and verifying can each be completed without a data sort; inclusion of an "extra" identifier, e.g., the total number of RDF statements, may enhance the security of the signed statements by helping minimize exposure to potential attackers. The disclosure also describes how to later add additional statements to an existing signature and hash using an incremental process. Effective blank node handling may also be achieved using this incremental process by requiring intermediate machines to add a new "reverse-labeling" statement each time a blank node is locally assigned; the new statement, essentially, provides information to permit downstream to reverse the labeling process and thereby reliably verify authentic the original RDF statements.